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(54) **INFORMATION PROCESSING APPARATUS,
INFORMATION PROCESSING METHOD,
AND STORAGE MEDIUM**

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See application file for complete search history.

(71) Applicant: **FUJI XEROX CO., LTD.**, Tokyo (JP)

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(72) Inventors: **Kimiyoshi Arai**, Kanagawa (JP);
Noriyuki Kurabayashi, Tokyo (JP)

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(73) Assignee: **FUJI XEROX CO., LTD.**, Tokyo (JP)

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- H04L 29/06** (2006.01)
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 - G06Q 50/24** (2012.01)
 - G06Q 10/10** (2012.01)
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Primary Examiner — Hosuk Song
(74) *Attorney, Agent, or Firm* — Sughrue Mion, PLLC

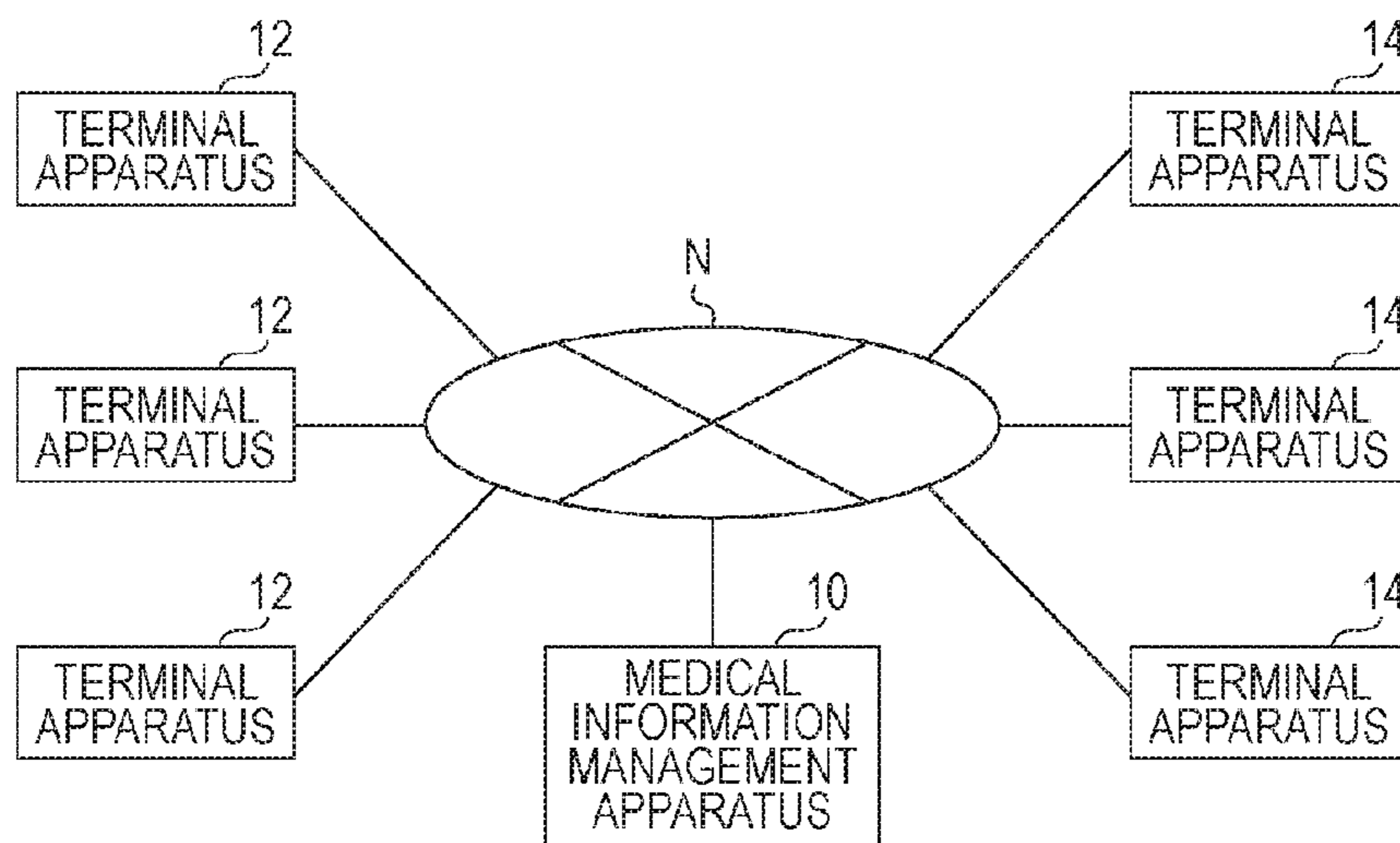
- (52) **U.S. Cl.**
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(57) **ABSTRACT**

An information processing apparatus includes a memory that stores document data; a creating unit that creates access control information indicative of access control to the document data, the access control information being different depending on a group of a publication source of the document data; and a controller that controls an access to the document data by using the access control information.

- (58) **Field of Classification Search**
- CPC G06F 21/31; G06F 21/60; G06F 21/6245; G06F 19/32; G06F 19/322; G06Q 50/24

13 Claims, 7 Drawing Sheets



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FIG. 1

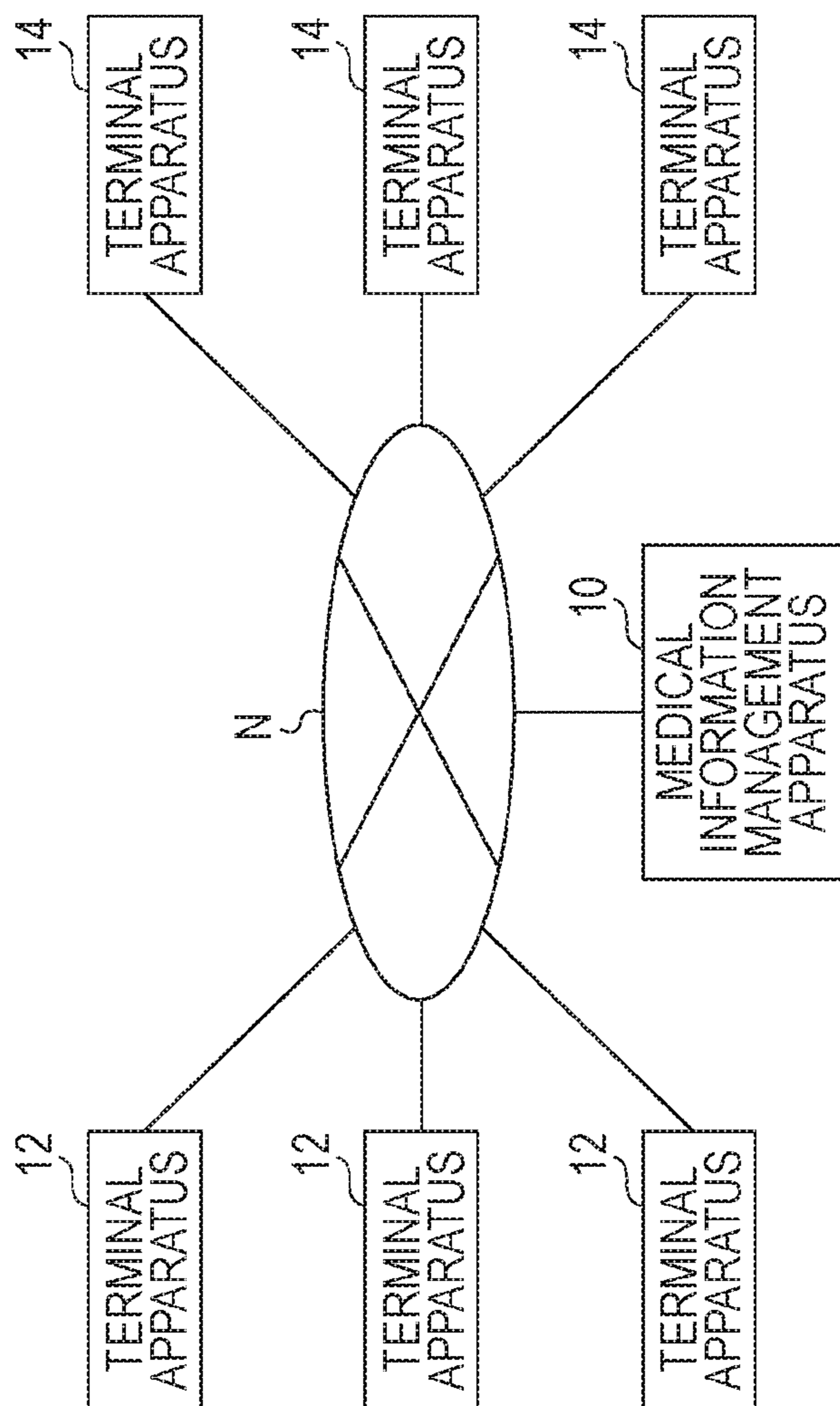


FIG. 2

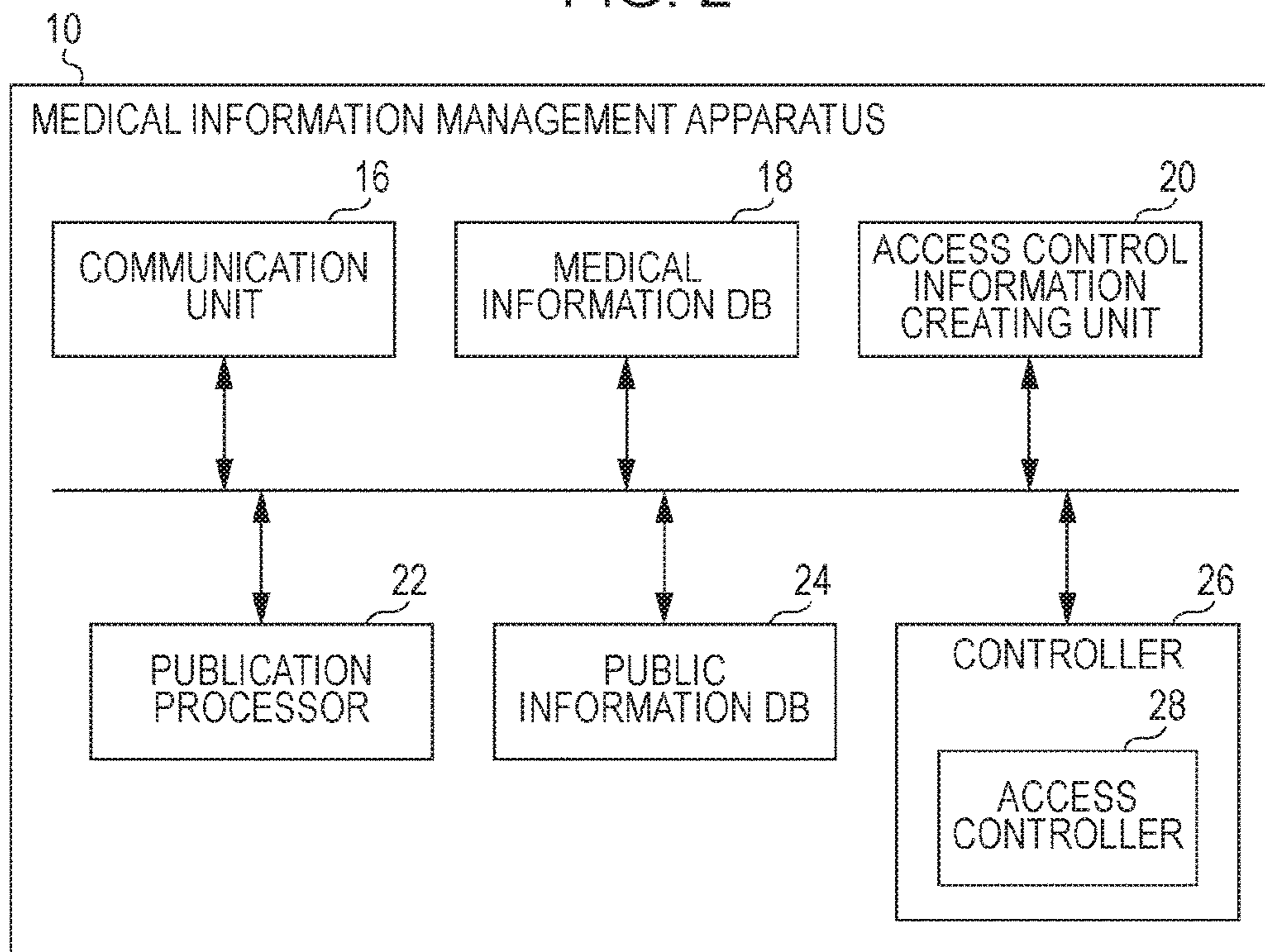


FIG. 3

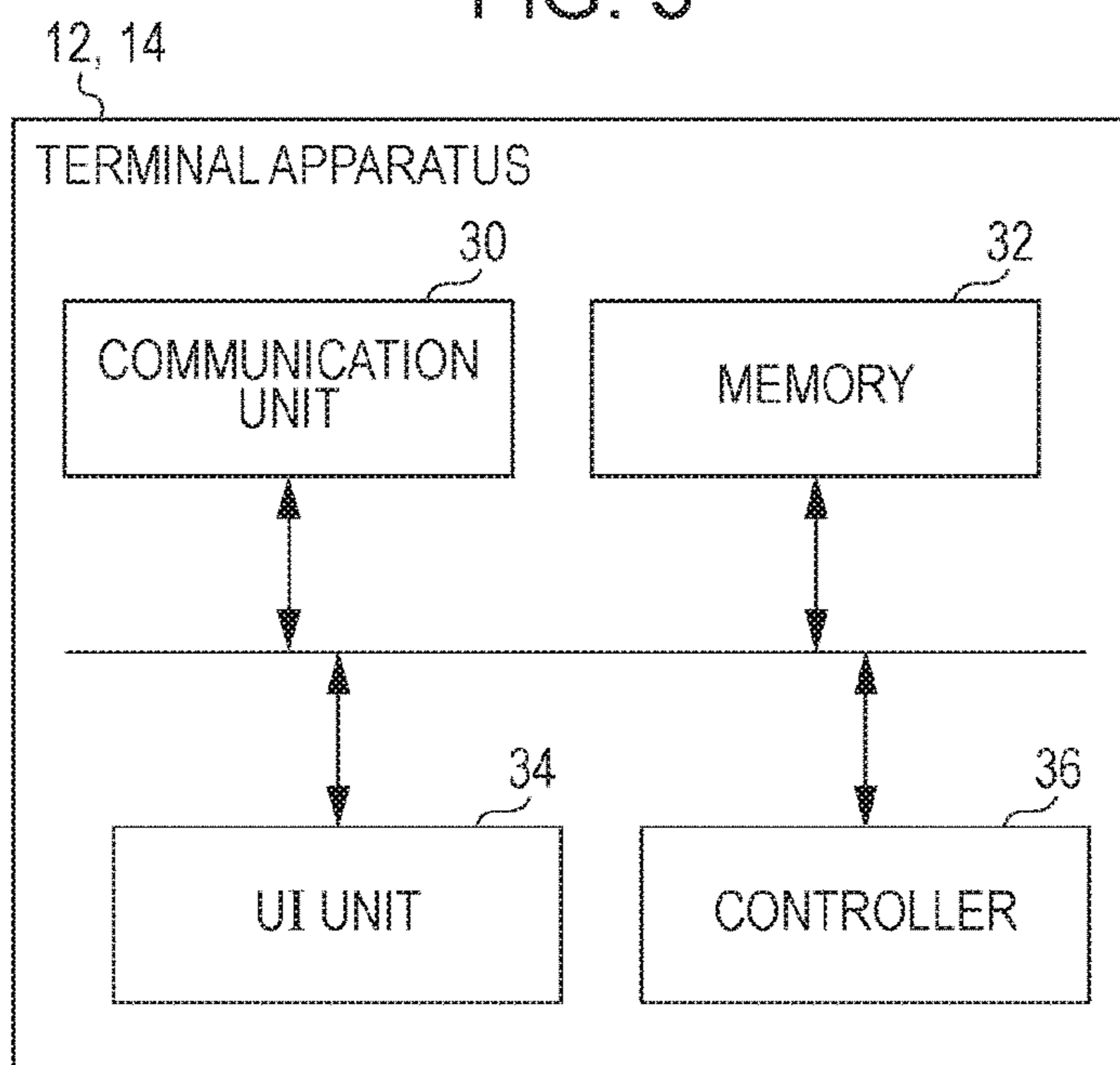


FIG. 4

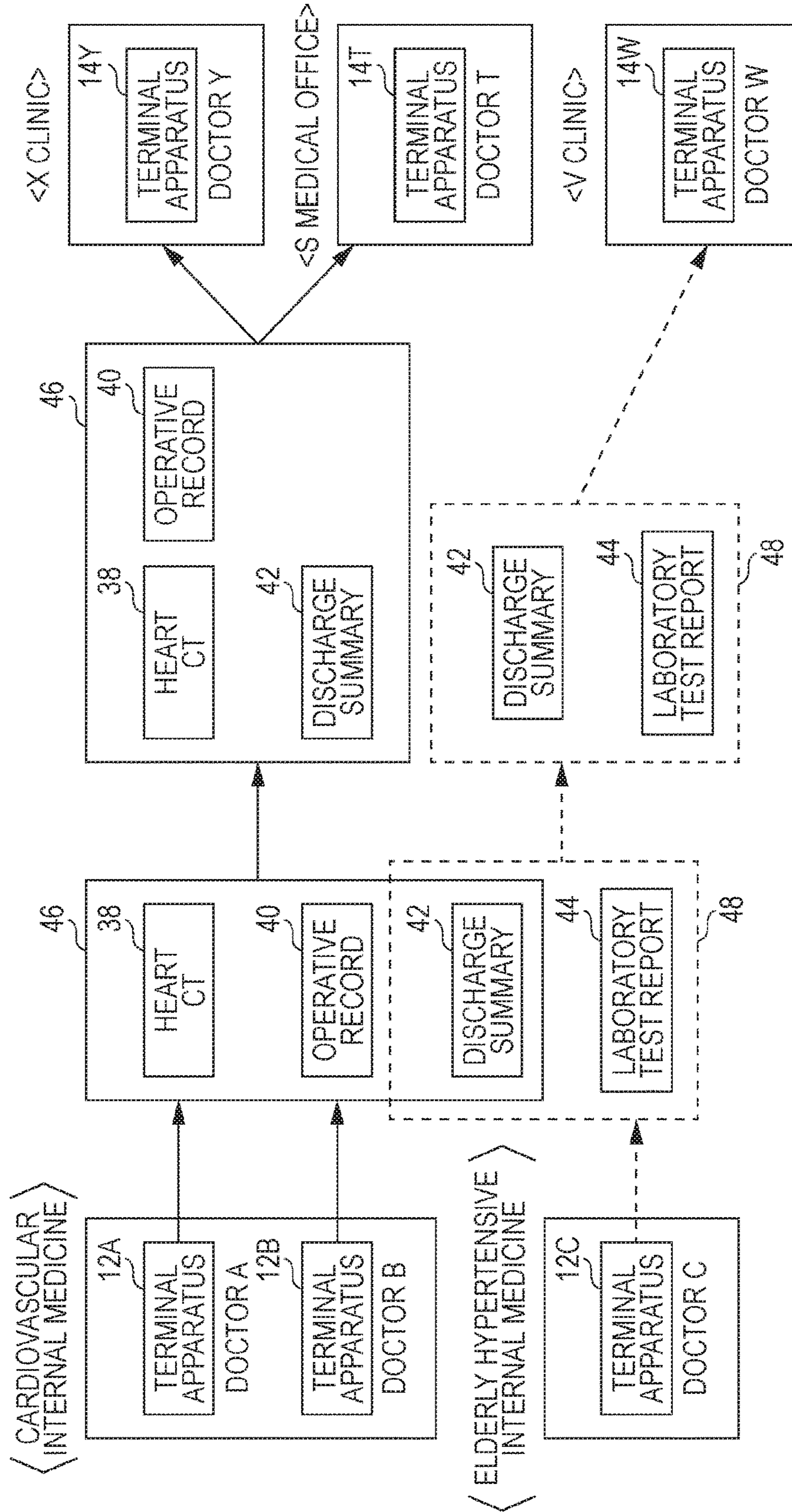


FIG. 5

<MEDICAL INSTITUTION MANAGEMENT TABLE>

DEPARTMENT OF PUBLICATION SOURCE	MEDICAL INSTITUTION OF PUBLICATION DESTINATION CANDIDATE
CARDIOVASCULAR INTERNAL MEDICINE	X CLINIC
CARDIOVASCULAR INTERNAL MEDICINE	S MEDICAL OFFICE
CARDIOVASCULAR INTERNAL MEDICINE	Z HEART CLINIC
ELDERLY HYPERTENSIVE INTERNAL MEDICINE	V CLINIC

FIG. 6

<ACCESS CONTROL INFORMATION, ACL>

	HEART CT	OPERATIVE RECORD	DISCHARGE SUMMARY	LABORATORY TEST REPORT
CARDIOVASCULAR INTERNAL MEDICINE	· X CLINIC · S MEDICAL OFFICE	· X CLINIC · S MEDICAL OFFICE	· X CLINIC · S MEDICAL OFFICE	
ELDERLY HYPERTENSIVE INTERNAL MEDICINE			V CLINIC	V CLINIC

FIG. 7

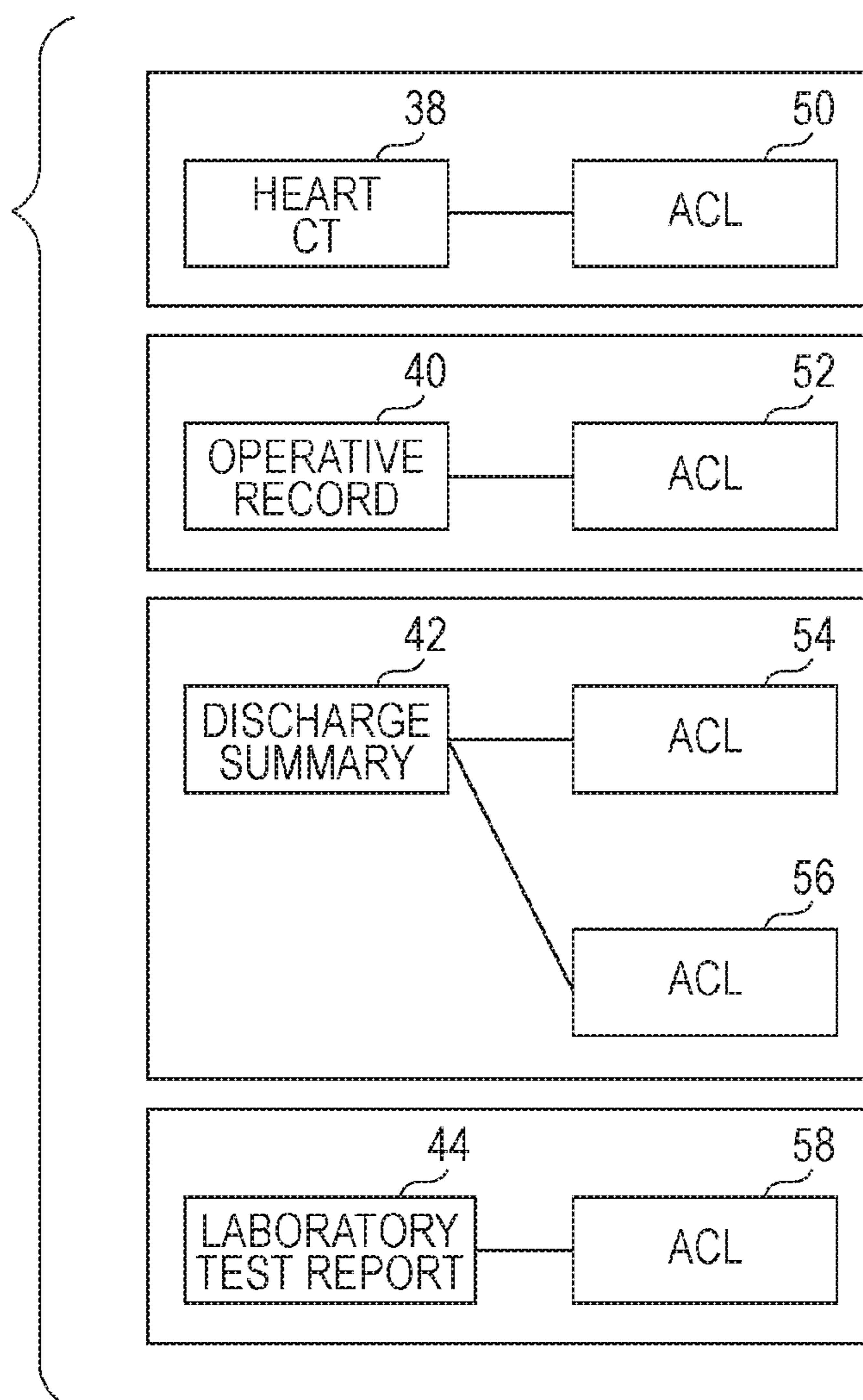
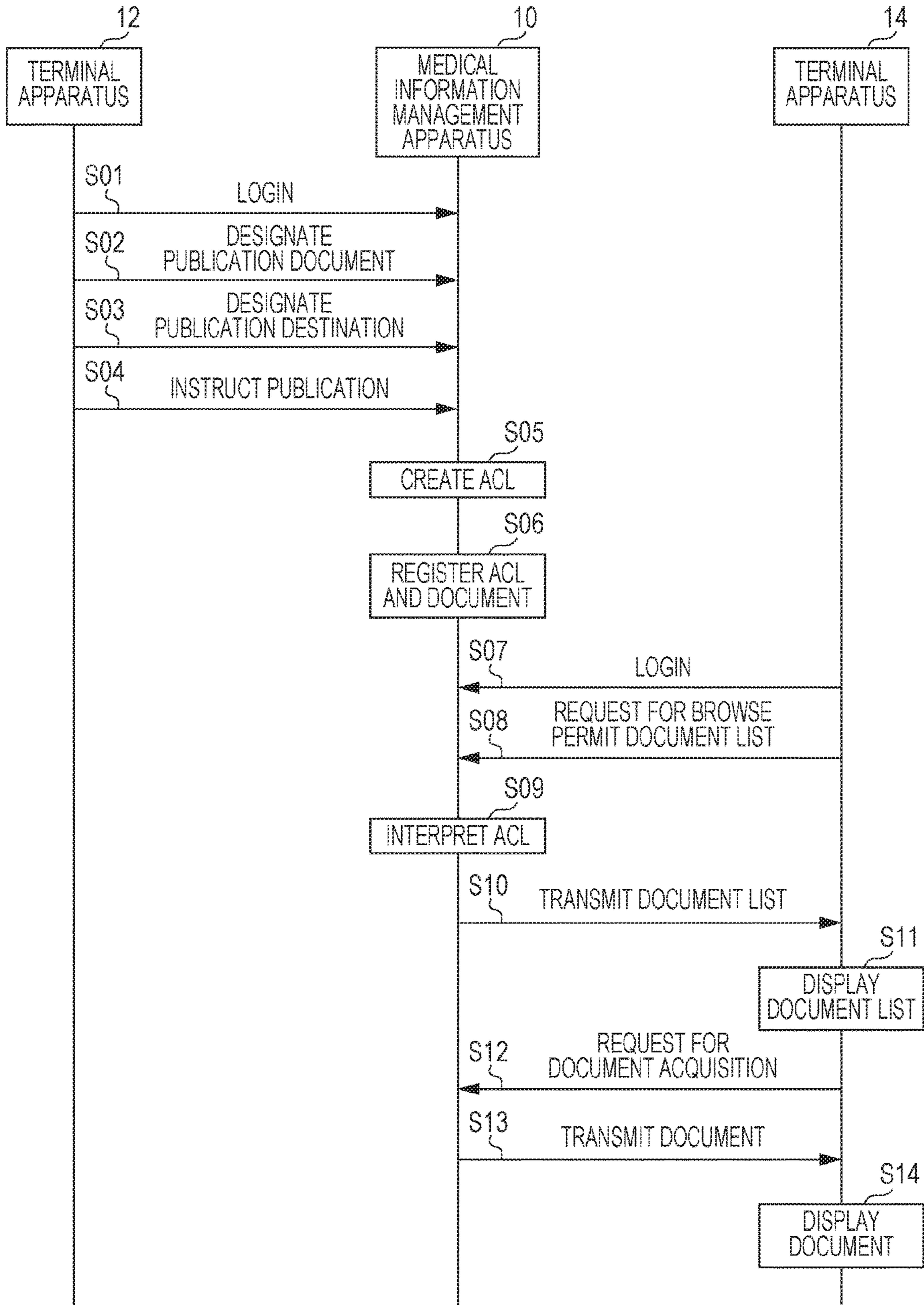


FIG. 8



**INFORMATION PROCESSING APPARATUS,
INFORMATION PROCESSING METHOD,
AND STORAGE MEDIUM**

CROSS-REFERENCE TO RELATED
APPLICATIONS

This application is based on and claims priority under 35 USC 119 from Japanese Patent Application No. 2015-182889 filed Sep. 16, 2015.

BACKGROUND

(i) Technical Field

The present invention relates to an information processing apparatus, an information processing method, and a storage medium.

(ii) Related Art

An access to document data may be occasionally controlled.

SUMMARY

According to an aspect of the invention, there is provided an information processing apparatus including a memory that stores document data; a creating unit that creates access control information indicative of access control to the document data, the access control information being different depending on a group of a publication source of the document data; and a controller that controls an access to the document data by using the access control information.

BRIEF DESCRIPTION OF THE DRAWINGS

An exemplary embodiment of the present invention will be described in detail based on the following figures, wherein:

FIG. 1 is a block diagram showing a medical information management system according to an exemplary embodiment of the present invention;

FIG. 2 is a block diagram showing a medical information management apparatus according to this exemplary embodiment;

FIG. 3 is a block diagram showing a terminal apparatus;

FIG. 4 is an illustration for describing an overview of processing in the medical information management system;

FIG. 5 illustrates an example of a medical institution management table;

FIG. 6 illustrates an example of access control information;

FIG. 7 illustrates correspondence between document data and access control information; and

FIG. 8 is a sequence diagram showing processing in the medical information management system.

DETAILED DESCRIPTION

FIG. 1 illustrates an example of a medical information management system serving as an information processing system according to an exemplary embodiment of the present invention. The medical information management system includes, for example, a medical information management apparatus 10 serving as an information processing apparatus, and terminal apparatuses 12 and 14. The medical information management apparatus 10 and the terminal apparatuses 12 and 14 are connected to a communication path N such as a network.

The medical information management apparatus 10 has a function of managing document data serving as medical information and providing the document data on demand. The medical information is, for example, an electronic medical chart (an electronic chart), information indicative of a letter of referral of a medical institution, a medical image (for example, X-ray CT image, a radiographic image, etc.), information indicative of a medical fee bill, and other information. For example, data of an electronic chart, data of a letter of referral, data of a medical image, data of a medical fee bill, and other data are managed as document data. Also, if a medical chart, a letter of referral, a medical fee bill, and other documents are created in sheets of paper, images on the sheets may be read by a scanner and document data (image data) generated accordingly may be managed.

The terminal apparatuses 12 and 14 each are, for example, any of apparatuses, such as a personal computer (PC), a tablet PC, a smart phone, and a cell phone, and each have a function of transmitting and receiving data to and from other apparatuses. The terminal apparatuses 12 and 14 each are arranged in, for example, any of medical institutions, such as a university hospital, a medical office, a clinic, and a private hospital. The terminal apparatus 12 is an apparatus to be used by a publication source of document data. The terminal apparatus 14 is an apparatus to be used by a publication destination of document data. In FIG. 1, three terminal apparatuses 12 and three terminal apparatuses 14 are connected to the communication path N; however, this is merely an example. A single terminal apparatus 12 and a single terminal apparatus 14 may be connected to the communication path N, or two or more terminal apparatuses 12 and two or more terminal apparatuses 14 may be connected to the communication path N.

In the medical information management system according to this exemplary embodiment, a user such as a doctor designates document data of a publication object and a publication destination of the document data by using the terminal apparatus 12. The medical information management apparatus 10 creates access control information for controlling an access to the document data in accordance with the designation. Also, if a user such as a doctor makes a request for an access to document data by using the terminal apparatus 14, the medical information management apparatus 10 controls the access to the document data by using access control information.

A configuration of the medical information management apparatus 10 is described below in detail with reference to FIG. 2. FIG. 2 illustrates the configuration of the medical information management apparatus 10.

A communication unit 16 is a communication interface, and has a function of transmitting data to other apparatuses and a function of receiving data from other apparatuses.

A medical information database (medical information DB) 18 is a memory device such as a hard disk. The medical information DB 18 stores document data serving as medical information. The document data is associated with document management information for managing the document data. The document management information includes, for example, document identification information for identifying the document data (for example, a document ID), information indicative of the version of the document data (for example, a version number), document type information indicative of the type of a document (for example, a document type code), information indicative of the title of the document, and information indicative of the created date of the document data. Also, the document data is associated with patient information. The patient information includes,

for example, patient identification information for identifying a patient (for example, a name or a patient ID), information indicative of the sex of the patient, information indicative of the birth date of the patient, and information indicative of the age of the patient. For example, every time when document data such as an electronic chart is created, the document data is stored in the medical information DB **18**. The document data stored in the medical information DB is shared by a publication source. That is, the document data stored in the medical information DB is data permitted to be accessed from the terminal apparatus **12**.

Also, the medical information DB **18** stores medical institution information relating to a medical institution registered in the medical information management system. The medical institution is a medical institution of a publication destination candidate of the document data. The medical institution information includes, for example, medical institution identification information for identifying the medical institution (for example, an institution name or an institution ID). Alternatively, the medical institution information may be stored in another memory device.

The medical information DB **18** may not be provided in the medical information management apparatus **10**, and may be provided in another apparatus connected to the communication path N.

An access control information creating unit **20** has a function of creating access control information indicative of access control to the document data of the publication object, the access control information being different depending on a publication source group of the document data. The access control information creating unit **20** creates access control information, for example, every document data. A single piece of access control information may be created for a single piece of document data, and plural pieces of access control information may be created for a single piece of document data. For example, if access control is set for certain document data by a single publication source group, a single piece of access control information is created for the document data. In contrast, if access control is set for certain document data by plural publication source groups, plural pieces of access control information are created for the document data. In this case, access control information is created every publication source group, and consequently, the same number of pieces of access control information as the number of publication source groups are created.

The access control information includes, for example, publication source information relating to a publication source group, document management information about document data of a publication object, patient information associated with the document data, and publication destination information relating to a publication destination. The publication source group and the publication destination each may be, for example, a medical institution, a department in the medical institution, or an area of a prefecture or a municipality.

The publication destination information includes, for example, publication destination identification information for identifying a publication source group (for example, a publication source name or a publication source ID) and publication setting user identification information for identifying a publication setting user (for example, a publication source user name or a publication source user ID). If the unit of the publication source group is a medical institution, such as a hospital, a medical office, or a clinic, the publication source information includes, as the publication source identification information, medical institution identification information for identifying the medical institution (for

example, a medical institution name or a medical institution ID). If the unit of the publication source group is a department, the publication source information includes, as the publication source identification information, medical institution identification information for identifying a medical institution to which the department belongs to (for example, a medical institution name or a medical institution ID) and department identification information for identifying the department (for example, a department name or a department ID). If the unit of the publication source group is an area, the publication source information includes, as the publication source identification information, area identification information for identifying the area (for example, an area name or an area ID). The publication source information may be transmitted from the terminal apparatus **12** that is used by the publication source group to the medical information management apparatus **10**, for example, at publication processing, or may be previously stored in the medical information DB **18** of the medical information management apparatus **10**.

The publication destination information includes, for example, publication destination identification information for identifying a publication destination (for example, a publication destination name or a publication destination ID). If the unit of the publication destination is a medical institution, such as a hospital, a medical office, or a clinic, the publication destination information includes, as the publication destination identification information, medical institution identification information for identifying the medical institution (for example, a medical institution name or a medical institution ID). If the unit of the publication destination group is a department, the publication destination information includes, as the publication destination identification information, medical institution identification information for identifying a medical institution to which the department belongs to (for example, a medical institution name or a medical institution ID) and department identification information for identifying the department (for example, a department name or a department ID). If the unit of the publication destination is an area, the publication destination information includes, as the publication destination identification information, area identification information for identifying the area (for example, an area name or an area ID). The publication destination information is previously transmitted from the publication destination to the medical information management apparatus **10**, and is previously stored in the medical information DB **18** of the medical information management apparatus **10**. For example, when a medical institution or a department of a publication destination is registered in the medical information management system, publication destination information is transmitted from the publication destination to the medical information management apparatus **10** and is stored.

For example, if a user such as a doctor designates document data of a publication object and a publication destination of the document data by using the terminal apparatus **12** in a publication source group, the access control information creating unit **20** creates access control information for controlling an access to the document data in accordance with the designation.

As described above, the access control information includes the patient information and the publication source information. The access control information creating unit **20** permits a change in the access control information by the group indicated by the publication source information included in the access control information, but inhibits a

change in the access control information by a group other than the group indicated by the publication source information. For example, if the publication source information included in the access control information includes department identification information indicative of a department A, a change in the access control information by a doctor belonging to the department A is permitted, but a change in the access control information by a doctor belonging to a department other than the department A is inhibited. For example, if a user such as a doctor inputs patient information and publication source information by using the terminal apparatus **12** and hence makes a request for an access to access control information, the access control information creating unit **20** permits an access to access control information including the input patient information and publication source information, and permits a change in the access control information. In contrast, the access control information creating unit **20** inhibits an access to access control information not including the input patient information or publication source information, and inhibits a change in the access control information. In this way, the access control information is managed individually on a group basis.

A publication processor **22** has a function of registering document data of a publication object and access control information for the document data in an associated manner. The document data and the access control information are associated with each other and stored in a public information database (DB) **24**.

The public information DB **24** is a memory device such as a hard disk. The public information DB **24** stores document data of a publication object and access control information for the document data in an associated manner.

A controller **26** has a function of controlling operations of respective units of the medical information management apparatus **10**. Also, the controller **26** includes an access controller **28**.

The access controller **28** has a function of controlling an access to document data by using access control information. For example, if a user such as a doctor makes a request for an access to document data by using the terminal apparatus **14**, the access controller **28** controls the access to the document data by using access control information associated with the document data being an object of the access request. If the access request is an access request from a publication destination, the access to the document data is permitted. In contrast, if the access request is an access request not from a publication destination, the access to the document data is inhibited.

A configuration of each of the terminal apparatuses **12** and **14** is described below in detail with reference to FIG. **3**. FIG. **3** illustrates the configuration of the terminal apparatus **12**. The terminal apparatus **14** has the same configuration as the terminal apparatus **12**. A communication unit **30** is a communication interface, and has a function of transmitting data to other apparatuses and a function of receiving data from other apparatuses. A memory **32** is a memory device such as a hard disk. A UI unit **34** is a user interface, and includes a display and an operation unit. The display is a display device such as a liquid crystal display. The operation unit is an input device, such as a touch panel or a keyboard. A controller **36** controls operations of respective units of the terminal apparatus **12**.

An overview of processing in the medical information management system is described below with reference to FIG. **4**. FIG. **4** is an illustration for describing the overview of the processing.

Terminal apparatuses **12A**, **12B**, and **12C** are examples of the terminal apparatus **12**, and are terminal apparatuses that are used in, for example, a medical institution of a publication source (for example, a university hospital). Cardiovascular internal medicine and elderly hypertensive internal medicine are examples of departments in the university hospital, and correspond to examples of publication source groups. The terminal apparatuses **12A** and **12B** are terminal apparatuses that are used in the cardiovascular internal medicine in the university hospital, and the terminal apparatus **12C** is a terminal apparatus that is used in the elderly hypertensive internal medicine in the same university hospital.

Terminal apparatuses **14Y**, **14T**, and **14W** are examples of the terminal apparatus **14**, and are terminal apparatuses that are used in medical institutions of publication destinations. To be more specific, the terminal apparatus **14Y** is a terminal apparatus that is used in an X clinic as a medical institution, the terminal apparatus **14T** is a terminal apparatus that is used in an S medical office as a medical institution, and the terminal apparatus **14W** is a terminal apparatus that is used in a V clinic as a medical institution. Publication destination information (medical institution information) about the X clinic, S medical office, and V clinic are previously stored in the medical information DB **18** of the medical information management apparatus **10**.

For example, it is assumed that diagnosis and treatment are executed on, for example, a patient P, and a heart CT image **38**, operative record information **40**, discharge summary information **42**, and a laboratory test report **44** are created as document data (medical information). The heart CT image **38**, the operative record information **40**, the discharge summary information **42**, and the laboratory test report **44** are associated with patient information on the patient P and stored in the medical information DB **18**. The document data are data shared in, for example, the university hospital, and data permitted to be accessed from the terminal apparatuses **12A**, **12B**, and **12C**.

The heart CT image **38**, the operative record information **40**, and the discharge summary information **42** are document data belonging to a publication document group **46**. The discharge summary information **42** and the laboratory test report **44** are document data belonging to a publication document group **48**.

The document data belonging to the publication document group **46** is data designated as publication document data by doctors A and B belonging to the cardiovascular internal medicine. The document data belonging to the publication document group **48** is data designated as publication document data by a doctor C belonging to the elderly hypertensive internal medicine. In the example shown in FIG. **4**, the discharge summary information **42** belongs to both the publication document group **46** and the publication document group **48**. That is, the discharge summary information **42** is designated as document data of a publication object by both the doctors of the cardiovascular internal medicine and the elderly hypertensive internal medicine.

By the doctors A and B belonging to the cardiovascular internal medicine, the X clinic and the S medical office are designated as medical institutions of publication destinations. Therefore, the document data belonging to the publication document group **46** is data permitted to be accessed from the X clinic (the terminal apparatus **14Y**) and the S medical office (the terminal apparatus **14T**).

Also, by the doctor C belonging to the elderly hypertensive internal medicine, the V clinic is designated as a medical institution of a publication destination. Therefore,

the document data belonging to the publication document group **48** is data permitted to be accessed from the V clinic (the terminal apparatus **14W**).

As described above, the department of the publication source, the document data of the publication object, and the medical institution of the publication destination are associated with each other, and the document data of the publication object and the medical institution of the publication destination are individually set every department of the publication source.

The medical information management apparatus **10** is described below in further detail.

Example of a medical institution registered in the medical information management system are described with reference to FIG. **5**. FIG. **5** illustrates an example of a medical institution management table. The medical institution management table is an example of medical institution information. The data of the medical institution management table is previously created and stored in the medical information DB **18**. A department of a publication source is an example of a publication source group of document data. As examples of the department of the publication source, cardiovascular internal medicine and elderly hypertensive internal medicine are registered. The cardiovascular internal medicine and the elderly hypertensive internal medicine are, for example, departments in the same university hospital. A medical institution of a publication destination candidate is a medical institution of a publication destination candidate of document data. As examples of the medical institution of the publication destination candidate, an X clinic, an S medical office, a Z heart clinic, and a V clinic are previously registered. In the example shown in FIG. **5**, the cardiovascular internal medicine is associated with the X clinic, the S medical office, and the Z heart clinic, and the elderly hypertensive internal medicine is associated with the V clinic. That is, the X clinic, the S medical office, and the Z heart clinic are registered as medical institutions of publication destination candidates of document data to be publicized by a user such as a doctor belonging to the cardiovascular internal medicine, and the V clinic is registered as a medical institution of a publication destination candidate of document data to be publicized by a user such as a doctor belonging to the elderly hypertensive internal medicine. To select a medical institution of a publication destination, the user belonging to the cardiovascular internal medicine selects a medical institution of a publication destination from the X clinic, the S medical office, and the Z heart clinic. The user belonging to the elderly hypertensive internal medicine selects the V clinic as a medical institution of a publication destination.

Access control information is described below in detail with reference to FIG. **6**. FIG. **6** illustrates an example of access control information (access control list, ACL). The access control information is created in response to an instruction of a user of a publication source, and stored in the public information DB **24**. Access control information being different depending on a publication source group is created. If the unit of the publication source group is a department, access control information being different depending on a department is created. In the example shown in FIG. **6**, the heart CT image **38**, the operative record information **40**, and the discharge summary information **42** are designated as document data of a publication object of a patient P, and the X clinic and the S medical office are designated as medical institutions of publication destinations by a user belonging to the cardiovascular internal medicine of a publication source. Accordingly, in access control information created in

response to the instruction of the user belonging to the cardiovascular internal medicine, patient information on the patient P, publication source information on a cardiovascular internal medicine, document management information about the document data of the publication object (the heart CT image **38**, the operative record information **40**, and the discharge summary information **42**), and publication destination information on medical institutions of the publication destinations (the X clinic and the S medical office) are associated with each other. Also, the discharge summary information **42** and the laboratory test report **44** are designated as document data of a publication object of the patient P by a user belonging to the elderly hypertensive internal medicine of a publication source, and the V clinic is designated as a medical institution of a publication destination. Accordingly, in the access control information created in response to the instruction of the user belonging to the elderly hypertensive internal medicine, patient information on the patient P, publication source information on the elderly hypertensive internal medicine, document management information about the document data of the publication object (the discharge summary information **42** and the laboratory test report **44**), and publication destination information on the medical institution of the publication destination (the V clinic) are associated with each other. In this way, the different pieces of access control information are created for the cardiovascular internal medicine and the elderly hypertensive internal medicine. The access controller **28** controls an access from a medical institution of a publication destination to document data by referencing the access control information.

FIG. **7** illustrates an example of correspondence between document data and access control information (ACL). Access control information is created every document data of a publication object, and the document data and the access control information are associated with each other and stored in the public information DB **24**.

For example, the heart CT image **38** and ACL **50** for controlling an access to the heart CT image **38** are associated with each other and stored in the public information DB **24**. The ACL **50** includes patient information on a patient P, publication source information on the cardiovascular internal medicine of a publication source, document management information on the heart CT image **38**, and publication destination information on medical institutions of publication destinations (the X clinic and the S medical office).

Similarly, the operative record information **40** and ACL **52** for controlling an access to the operative record information **40** are associated with each other and stored in the public information DB **24**. The ACL **52** includes patient information on a patient P, publication source information on the cardiovascular internal medicine of a publication source, document management information on the operative record information **40**, and publication destination information on medical institutions of publication destinations (the X clinic and the S medical office).

Similarly, the discharge summary information **42**, and ACL **54** and ACL **56** for controlling an access to the discharge summary information **42** are associated with each other and stored in the public information DB **24**. As described above with reference to FIGS. **4** and **6**, the discharge summary information **42** is designated as the document data of the publication object by both the doctors of the cardiovascular internal medicine and the elderly hypertensive internal medicine. Therefore, the ACL **54** for the cardiovascular internal medicine and the ACL **56** for the elderly hypertensive internal medicine are created. The ACL

54 includes patient information on a patient P, publication source information on the cardiovascular internal medicine of a publication source, document management information on the discharge summary information **42**, and publication destination information on medical institutions of publication destinations (the X clinic and the S medical office). Also, the ACL **56** includes patient information on a patient P, publication source information on the elderly hypertensive internal medicine of a publication source, document management information on the discharge summary information **42**, and publication destination information on a medical institution of a publication destination (the V clinic).

Alternatively, the ACL **54** and ACL **56** may be included in single ACL. In this case, in the single ACL, an access from a user belonging to the cardiovascular internal medicine is permitted for a portion having written therein the ACL **54**, and a change in the portion is permitted. In contrast, in the single ACL, an access from a user belonging to the elderly hypertensive internal medicine is permitted for a portion having written therein the ACL **56**, and a change in the portion is permitted.

Similarly, the laboratory test report **44** and ACL **58** for controlling an access to the laboratory test report **44** are associated with each other and stored in the public information DB **24**. The ACL **58** includes patient information on a patient P, publication source information on the elderly hypertensive internal medicine of a publication source, document management information on the laboratory test report **44**, and publication destination information on a medical institution of a publication destination (the V clinic).

Processing in the medical information management system is described below in detail with reference to FIG. **8**. FIG. **8** is a sequence diagram showing the processing.

First, a user of a publication source logs in the medical information management apparatus **10** by using the terminal apparatus **12** (S01). For example, it is assumed that the doctor A of the cardiovascular internal medicine logs in the medical information management apparatus **10** by using a user ID and a password for the cardiovascular internal medicine. Authentication at login is executed by, for example, the controller **26** of the medical information management apparatus **10**. If a user ID and a password previously registered in the medical information management apparatus **10** match the user ID and the password input from the terminal apparatus **12**, login is permitted. In case of mismatch, login is not permitted.

Then, the user of the publication source (the doctor A of the cardiovascular internal medicine) designates document data of a publication object by using the terminal apparatus **12** (S02). For example, a list of document data stored in the medical information DB **18** is displayed on the UI unit **34** of the terminal apparatus **12**. Document data of a publication object is designated by the user (the doctor A of the cardiovascular internal medicine) from the list.

Also, the user of the publication source (the doctor A of the cardiovascular internal medicine) designates a publication destination by using the terminal apparatus **12** (S03). For example, a medical institution of a publication destination is designated from a medical institution group registered in the medical information management system. If the user of the publication source is the doctor A of the cardiovascular internal medicine, a medical institution of a publication destination is designated from a medical institution group of publication destination candidates corresponding to the cardiovascular internal medicine. In the example shown

in FIG. **5**, the X clinic, the S medical office, and the Z heart clinic are registered as medical institutions of publication destination candidates corresponding to the cardiovascular internal medicine. For example, a list of the medical institutions of the publication destination candidates is displayed on the UI unit **34** of the terminal apparatus **12**. A medical institution of a publication destination is designated by the user (the doctor A of the cardiovascular internal medicine) from the list.

Then, the user of the publication source (the doctor A of the cardiovascular internal medicine) instructs publication of the document data by using the terminal apparatus **12** (S04).

In the medical information management apparatus **10**, the access control information creating unit **20** creates access control information (ACL) (S05). For example, as shown in FIG. **6**, it is assumed that the doctor A of the cardiovascular internal medicine designates the heart CT image **38**, the operative record information **40**, and the discharge summary information **42** as document data of a publication object, and designates the X clinic and the S medical office as medical institutions of publication destinations. In this case, the access control information creating unit **20** creates access control information for the heart CT image **38**, access control information for the operative record information **40**, and access control information for the discharge summary information **42**. For example, as shown in FIG. **7**, the ACL **50** is created for the heart CT image **38**, the ACL **52** is created for the operative record information **40**, and the ACL **54** is created for the discharge summary information **42**.

The publication processor **22** associates the document data of the publication object with the access control information for the document data, and stores the document data and the access control information in the public information DB **24** (S06).

Even when document data is publicized by the doctor C of the elderly hypertensive internal medicine, processing similar to the above-described processing is executed. Accordingly, access control information for the elderly hypertensive internal medicine is created. For example, as shown in FIG. **6**, it is assumed that the doctor C of the elderly hypertensive internal medicine designates the discharge summary information **42** and the laboratory test report **44** as document data of publication objects, and designates the V clinic as a medical institution of a publication destination. In this case, the access control information creating unit **20** creates access control information for the discharge summary information **42** and access control information for the laboratory test report **44**. For example, as shown in FIG. **7**, the ACL **56** is created for the discharge summary information **42**, and the ACL **58** is created for the laboratory test report **44**.

When a user of a publication destination makes an access to document data, the user of the publication destination logs in the medical information management apparatus **10** by using the terminal apparatus **14** (S07). For example, it is assumed that the doctor Y of the X clinic logs in the medical information management apparatus **10** by using a user ID and a password. Authentication at login is executed by, for example, the controller **26** of the medical information management apparatus **10**. If a user ID and a password previously registered in the medical information management apparatus **10** match the user ID and the password input from the terminal apparatus **14**, login is permitted. In case of mismatch, login is not permitted.

Then, the user of the publication destination (the doctor Y of the X clinic) makes a request for a list of document data

permitted to be browsed by the user, by using the terminal apparatus **14** (S08). At this time, publication destination information is transmitted from the terminal apparatus **14** to the medical information management apparatus **10**. The publication destination information includes medical institution identification information for identifying the X clinic (for example, the name or ID of the X clinic).

In the medical information management apparatus **10**, the access controller **28** interprets access control information (ACL) stored in the public information DB **24** (S09). Accordingly, the access controller **28** specifies document data permitted to be browsed by the user of the publication destination (the doctor Y of the X clinic). To be specific, the access controller **28** references access control information including medical institution identification information transmitted from the terminal apparatus **14** as publication destination information, and specifies document data associated with the medical institution identification information, as document data permitted to be browsed by the user of the publication destination. Then, the access controller **28** transmits data of a list of document data permitted to be browsed by the user of the publication destination, to the terminal apparatus **14** (S10). The list of the document data permitted to be browsed is displayed on the UI unit **34** of the terminal apparatus **14** (S11).

For example, as shown in FIG. 6, the heart CT image **38**, the operative record information **40**, and the discharge summary information **42** are publicized to the X clinic. Accordingly, an access to the heart CT image **38**, the operative record information **40**, and the discharge summary information **42** is permitted. In this case, the access controller **28** transmits the data of the list of the document data permitted to be publicized to the X clinic, to the terminal apparatus **14**. Accordingly, the list of the heart CT image **38**, the operative record information **40**, and the discharge summary information **42** is displayed on the UI unit **34** of the terminal apparatus **14** of the X clinic.

Then, the user of the publication destination (the doctor Y of the X clinic) designates document data being an acquisition object from the list of the document data displayed on the UI unit **34** and makes a request for acquisition of the document data by using the terminal apparatus **14** (S12). Accordingly, information for identifying the document data designated by the user is transmitted from the terminal apparatus **14** to the medical information management apparatus **10**.

In the medical information management apparatus **10**, the access controller **28** acquires the document data being the acquisition object, which is designated by the user, from the public information DB **24**, and transmits the document data to the terminal apparatus **14** (S13). In the terminal apparatus **14**, the document data is displayed on the UI unit **34** (S14).

For example, when the heart CT image **38** is designated by the doctor Y of the X clinic, data (document data) of the heart CT image **38** is transmitted from the medical information management apparatus **10** to the terminal apparatus **14**, and the heart CT image **38** is displayed on the UI unit **34** of the terminal apparatus **14**.

Even when the doctor T of the S medical office or the doctor W of the V clinic is a user of a publication destination, processing similar to the above-described processing is executed. For example, when a request is made for acquisition of document data by the doctor T of the S medical office, a list of the heart CT image **38**, the operative record information **40**, and the discharge summary information **42** is displayed on the UI unit **34** of the terminal apparatus **14**, as a list of document data permitted to be browsed. When a

request is made for acquisition of document data by the doctor W of the V clinic, a list of the discharge summary information **42** and the laboratory test report **44** is displayed on the UI unit **34** of the terminal apparatus **14**, as a list of document data permitted to be browsed.

As described above, in this exemplary embodiment, different access control information is generated on a publication source group basis, and an access to document data is controlled based on the access control information. The access control information is individually managed on a group basis, and an access to access control information set by one group from the other group is inhibited. Accordingly, the access control information set by the one group is not changed by the other group. Therefore, on the basis of a publication source group of document data, access control to the document data is provided.

For example, access control information set by a doctor belonging to the doctor's department is not changed by a doctor belonging to another department. Accordingly, on the basis of a department of a publication source of document data, access control to the document data is provided. For example, when respective departments are independent in the same hospital, even if the same medical information management system is used, independence of each department is ensured for access control to document data.

In the above-described example, a department is a publication source group, and access control information is created every individual department. However, even when the publication source group is a medical institution or an area, independence of each group is ensured for access control to document data similarly to the case of the department. For example, if plural medical institutions are registered in the medical information management system as publication source groups, access control information is created every medical institution, and access control information set by one medical institution is not changed by the other medical institution. Accordingly, even when the same medical information management system is used, independence of each medical institution is ensured for access control to document data.

If the publication source group is a medical institution or an area, it may be expected that the medical information management system according to this exemplary embodiment is applied to local medical care. In this case, by using the medical information management system according to this exemplary embodiment, access control to medical information in the local medical care is provided.

With this exemplary embodiment, by updating access control information without updating document data itself, access control to document data is changed. For example, when plural publication source groups set access control to the same document data in accordance with the convenience of each group, only access control information may be created or updated in accordance with the convenience of each group without updating the document data itself.

A modification is described below. When publication processing is applied to document data stored in the medical information DB **18**, a template named default publication document type may be used. The default publication document type is a type of document data of a publication object, and the template indicates the type. For example, when a user belonging to a publication source group logs in the medical information management apparatus **10** and instructs application of publication processing, the access control information creating unit **20** specifies the type of document data of a publication object by referencing the template and treats the document data corresponding to the default pub-

lication document type as document data of a publication object. Document management information on document data includes a document type code indicative of a document type. By referencing the document type code, the type of the document data is specified. Access control information about the publication source group includes document management information on the document data corresponding to the default publication document type and publication destination information about a publication destination designated by a user belonging to the publication source group. Accordingly, an access from the publication destination to the document data corresponding to the default publication document type is permitted. For example, if the default publication document type is an electronic chart, the electronic chart is treated as a publication object. By using the default publication document type, as compared with a case without the use of the default publication document type, work of the user relating to the publication processing is simplified. Further, for example, if "document classified into inspection record" is set in the default publication document type, a document of an inspection record of, for example, a blood test, a stomach endoscopic examination, or a chest X-ray examination is treated as a publication object.

As another modification, when the publication processing is applied to document data which will be registered in the medical information DB **18** in future, a template named automatic publication document type may be used. The automatic publication document type is a type of document data of a publication object, and the template indicates the type. When document data is newly stored in the medical information DB **18**, the access control information creating unit **20** specifies the type of the document data of the publication object by referencing the template. If the type of the newly registered document data corresponds to the public document type, the access control information creating unit **20** treats the document data as a publication object. In this case, access control information includes document management information on the document data. By using the automatic publication document type, as compared with a case without the use of the automatic publication document type, work of a user relating to the publication processing is simplified.

Also, a publication period of document data may be set. The publication period is a period in which an access to document data from a publication destination is permitted. The access controller **28** permits an access to the document data from the publication destination in the publication period, and inhibits an access to the document data from the publication destination outside the publication period. Information indicative of the publication period is included in access control information. The access controller **28** controls an access depending on the publication period by referencing the information. Accordingly, an access to the document data is automatically inhibited when the publication period has elapsed. The user of the publication source does not have to stop the publication.

In this exemplary embodiment, when at least one of a publication source group, document data of a publication object, and a state of a publication destination is changed, access control information relating to the change is updated, or new access control information is created. For example, if at least one of states including a publication flag of document data, a publication period, a publication destination (medical institution, medical office, area, etc.), a publication destination permitted for publication by a publication source group, a publication destination facility master, an automatic publication document type, an automatic pub-

lication period, a default publication document type of the publication source group, a document type permitted for publication by the publication source group, a defined document type, a department, a patient or a user, document data, a version of the document data, a publication tag of the document data, a document type, is changed, access control information relating to the change in the state is updated or new access control information is created. The other access control information not relating to the above-described change in the state is not influenced, or updated by the change in the state. That is, individual control information is independent from the other access control information. Even when a state relating to certain access control information is changed, the other access control information is not influenced, or updated by the change in the state.

When publication of document data is stopped, document data of a publication stop object may be deleted from the public information DB **24**, and access control information associated with the document data may be left in the public information DB **24**. Accordingly, leakage of the document data of the publication stop object may be prevented, and information relating to access control may be provided to the publication destination.

The medical information management apparatus **10** is realized by, for example, cooperation of a hardware resource and software. To be specific, the medical information management apparatus **10** includes a processor such as a central processing unit (CPU) (not illustrated). The processor reads out a program stored in a memory device (not shown) and executes the program. Hence, the functions of the respective units of the medical information management apparatus **10** are realized. The program is stored in the memory device through a storage medium, such as a compact disc (CD) or a digital versatile disc (DVD), or a communication path such as a network. Alternatively, the respective units of the medical information management apparatus **10** may be realized by, for example, a hardware resource, such as a processor or an electronic circuit. A device such as a memory may be used for the realization. For another example, the respective units of the medical information management apparatus **10** may be realized by, for example, a digital signal processor (DSP) or a field programmable gate array (FPGA).

The foregoing description of the exemplary embodiment of the present invention has been provided for the purposes of illustration and description. It is not intended to be exhaustive or to limit the invention to the precise forms disclosed. Obviously, many modifications and variations will be apparent to practitioners skilled in the art. The embodiment was chosen and described in order to best explain the principles of the invention and its practical applications, thereby enabling others skilled in the art to understand the invention for various embodiments and with the various modifications as are suited to the particular use contemplated. It is intended that the scope of the invention be defined by the following claims and their equivalents.

What is claimed is:

1. An information processing apparatus comprising:
 - a memory that stores document data; and
 - at least one hardware processor configured to implement:
 - a creating unit that creates access control information indicative of access control to the document data, the access control information being different depending on a group of a publication source of the document data; and
 - a controller that controls an access to the document data by using the access control information,

15

wherein the group comprises a plurality of users of the publication source, and
 wherein the group is separate from a second group comprising at least one user of the publication source other than the plurality of users.

2. The information processing apparatus according to claim 1,

wherein the document data is data relating to medical care, and

wherein the group is a medical institution or a department in the medical institution.

3. The information processing apparatus according to claim 1, wherein the creating unit creates the access control information to permit the access to the document data corresponding to a specific document type.

4. The information processing apparatus according to claim 1,

wherein the access control information includes information indicative of a period in which the access to the document data is permitted, and

wherein the controller permits the access to the document data in the period, and inhibits the access to the document data outside the period.

5. The information processing apparatus according to claim 1, wherein the access control information includes information indicative of a publication destination of the document data, and the access control information is updated by a change in at least one of the group of the publication source, the document data of an access object, and the publication destination.

6. The information processing apparatus according to claim 1,

wherein the group of the publication source includes a plurality of groups, and

wherein the creating unit creates the access control information different depending on an individual group included in the plurality of groups.

7. The information processing apparatus according to claim 6, wherein the document data is data that is shared by the plurality of groups.

8. A non-transitory computer readable medium storing a program causing a computer including a memory that stores document data to function as a configuration, the configuration comprising:

a creating unit that creates access control information indicative of access control to the document data, the access control information being different depending on a group of a publication source of the document data; and

a controller that controls an access to the document data by using the access control information,

wherein the group comprises a plurality of users of the publication source, and

wherein the group is separate from a second group comprising at least one user of the publication source other than the plurality of users.

9. An information processing method comprising:
 storing document data;

creating access control information indicative of access control to the document data, the access control infor-

16

mation being different depending on a group of a publication source of the document data; and
 controlling an access to the document data by using the access control information,

wherein the group comprises a plurality of users of the publication source, and

wherein the group is separate from a second group comprising at least one user of the publication source other than the plurality of users.

10. The information processing apparatus according to claim 1,

wherein the creating unit creates the access control information of the document data in response to a request from at least one of the plurality of users of the group, and

wherein the creating unit further creates a second access control information of the document data in response to a second request from the second group.

11. The information processing apparatus according to claim 10,

wherein the request from the at least one of the plurality of users of the group indicates at least a first destination at which the document data may be accessed,

wherein the second request from the second group indicates at least a second destination at which the document data may be accessed, and

wherein the second destination is different than the first destination.

12. The information processing apparatus according to claim 11,

wherein the at least one hardware processor is further configured to implement:

providing a first listing of a first plurality of document data, including the document data, to the first destination according to the access control information and in response to a request from the first destination for the first listing,

providing a second listing of a second plurality of document data, including the document data, to the second destination according to the second access control information in response to a request from the second destination for the second listing, and

providing the document data to one of the first destination and the second destination in response to a selection of the document data from one of the first listing and the second listing provided to the one of the first destination and the second destination.

13. The information processing apparatus according to claim 1,

wherein the access control information indicates that at least one of the plurality of users of the group of the publication source selected a plurality of different groups, other than the group and the second group, which may access the document data,

wherein the plurality of different groups comprise a plurality of separate medical institutions, and

wherein the group and the second group comprise ones of separate departments in a same medical institution, different than the plurality of separate medical institutions.